Thermal Desorption Testing

This testing will be performed to determine if thermal desorption is applicable for the removal of PFOA and PFOS from the bulk compost. The scope of work for the thermal desorption testing includes a bench-scale (laboratory component) and a full-scale field trial.

Bench-Scale Testing

The bench-scale testing will be performed by Kemron Environmental Services, Inc. The scope of work includes testing four different samples of compost (3, 6, 12, and 18 months in age). Samples will be collected of each compost material and sent to the treatability lab. An aliquot from each untreated material will be sampled and sent to Test America for analysis of PFOA and PFOS. For each age compost material, the lab will treat a pre-weighed aliquot of the material in a standard laboratory kiln as follows:

1. Dry the sample at 100 degrees Celsius for 24 hours to drive off most if not all of the water, and then treat a 2,000 gram sample of the compost at 750 degrees Fahrenheit for 15 minutes (defined as time soil temp is at 750 degrees F). During the treatment at 750 degrees Fahrenheit, pass the air from the kiln through charcoal glass tubes (probably the 150 mg tubes) at an approximate rate of 12 feet per second during the entire heating period.
2. Dry the sample at 100 degrees Celsius for 24 hours to drive off most if not all of the water, and then treat a 2,000 gram sample of the compost at 1,850 degrees Fahrenheit for 15 minutes. During the treatment at 1,850 degrees Fahrenheit, pass the air from the kiln through charcoal glass tubes (probably the 150 mg tubes) at an approximate rate of 12 feet per second during the entire heating period.

Once a test is complete (either at 750 or 1850 degrees F), the treatability lab will measure mass of all residuals and then collect the remaining solids (about 1,300 grams based on volatile solids testing) and ship to Test America for PFOA and PFOS analyses. In addition, the condensate and the carbon tubes from each test will be collected and shipped to Test America for PFOA and PFOS analyses.

Samples will be treated in stainless steel pans that have been pre-cleaned with ethanol solution. All samples will be loaded into the sample containers using stainless steel spoons cleaned with ethanol.

Full-Scale Field Trial

Harvest Farms will mobilize a Fite Industries rotary drum sludge dryer with a natural gas fired thermal oxidizer to the site to test low temperature thermal desorption of PFCs from the compost and subsequent oxidation of removed PFCs. Specifically, the process will include a feed hopper that meters the compost into a counterflow rotary drum. The drum exhaust gases will exit the drum at the feed end and pass through a pulse jet baghouse to retain any solids with the remaining gases passing through a natural gas fired thermal oxidizer.

Harvest Farms will provide thermal treatment of a minimum of 150 tons of unscreened compost for the purpose of evaluating the removal efficiency of PFC's using thermal desorption technology. Harvest Farms will decontaminate all equipment prior to start of any testing. Harvest Farms will operate the equipment at various temperatures as directed by Dalton Utilities and maintain steady state conditions while sampling events occur. Harvest Farms will maintain records of operation to include cubic yards or pounds treated, operating temperatures of the treatment process, fuel consumption, moisture content, solids content, water usage, power consumption and other data as agreed upon.

Dalton Utilities will collect samples when the equipment is operating at various temperatures and have them analyzed for PFC constituents. Once treated, Dalton Utilities will remove the treated compost material to a location for storage until further action is needed.

Samples will be taken both pre and post LTTD treatment of material each hour. The hourly samples (Pre and Post) will be composited and a single pre-treatment composite and a single post-treatment composite will be sent to Test America at the end of each day for PFOA and PFOS analyses. Pretreatment samples will be collected as follows:

- Samples will be collected from the loader bucket.
- Samples will be collected using a stainless steel spade.
- The sample volume will completely fill one sample container.
- Samples will be labeled on the bottom of the container with a permanent marker.
- Sample label will include the age of the material, (6, 12, 18 or 24), the date of the sample, the letters PRE and the sequential bucket number of the day.
- Decontaminate all sampling equipment after sample is obtained as described in the decontamination sequence.

Post treatment samples will be collected as follows:

- Sample will be collected from the discharge auger before filling of the hopper.
- Sample will be collected hourly using a stainless steel spade.
- The sample volume will completely fill one sample container.
- Samples will be labeled on the bottom of the container with a permanent marker.
- Sample label will include the age of the material, (6, 12, 18 or 24), the date of the sample, the letters POST and the time the sample was taken.
- Decontaminate all sampling equipment after sample is obtained as described in the decontamination sequence.

All samples will be collected, placed in a sample container and labeled. The sampling equipment will be cleaned after every sample as described below:

- All instruments used in obtaining samples must be decontaminated.
- Remove coarse debris with a paper towel and water spray.
- Meticulously rinse instruments with IPA (isopropyl alchol in pressurized sprayer).
- Meticulously rinse instruments with deionized water (in squeeze spray bottles).